

Shades

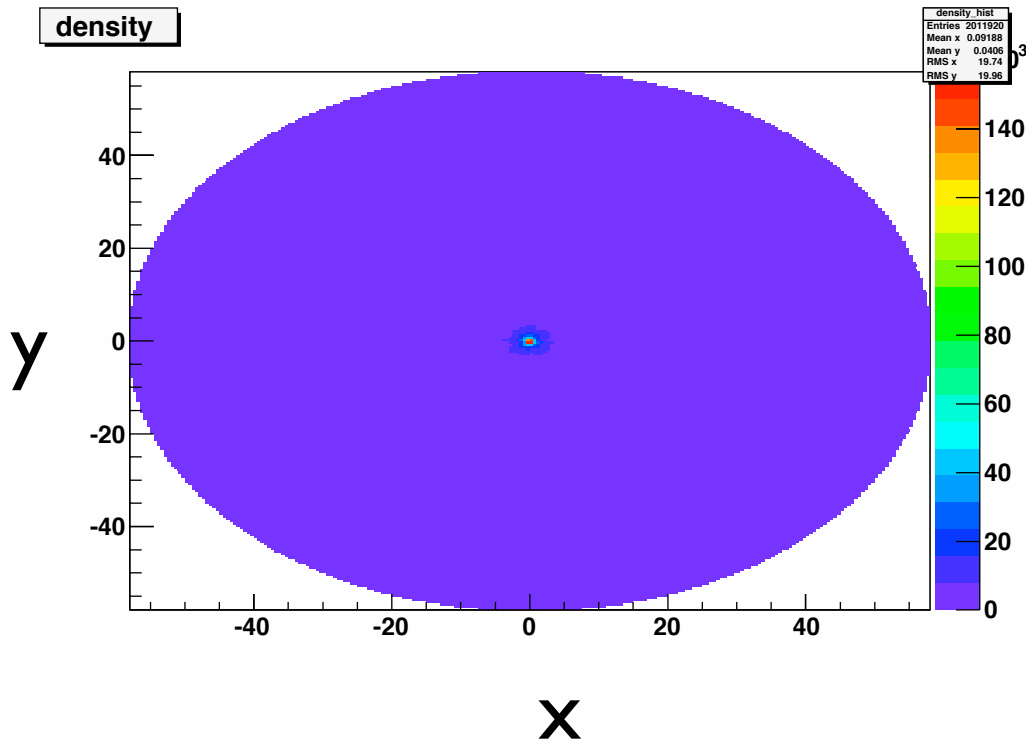
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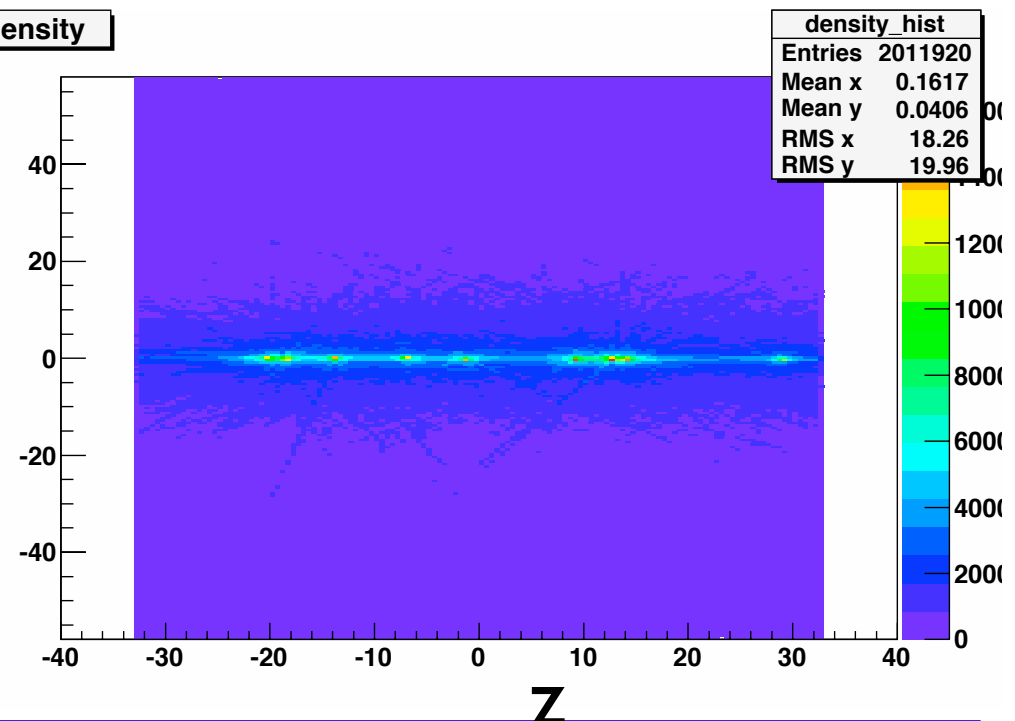
General Plan

- no scintillation in pisa
- use HIJING events run through PISA to get the distribution of scintillation
 - use general PISA information on charged tracks (KinHits)
 - drawback: approximate track as a straight line, don't take into account bending of the tracks in field
- generate scintillation weighted by HIJING density and trace to HBD, what fraction of light is blocked by the shades?

charged particle density



2D projections
from hijing events
run through PISA



n.b. wrong plot showed last week

shades

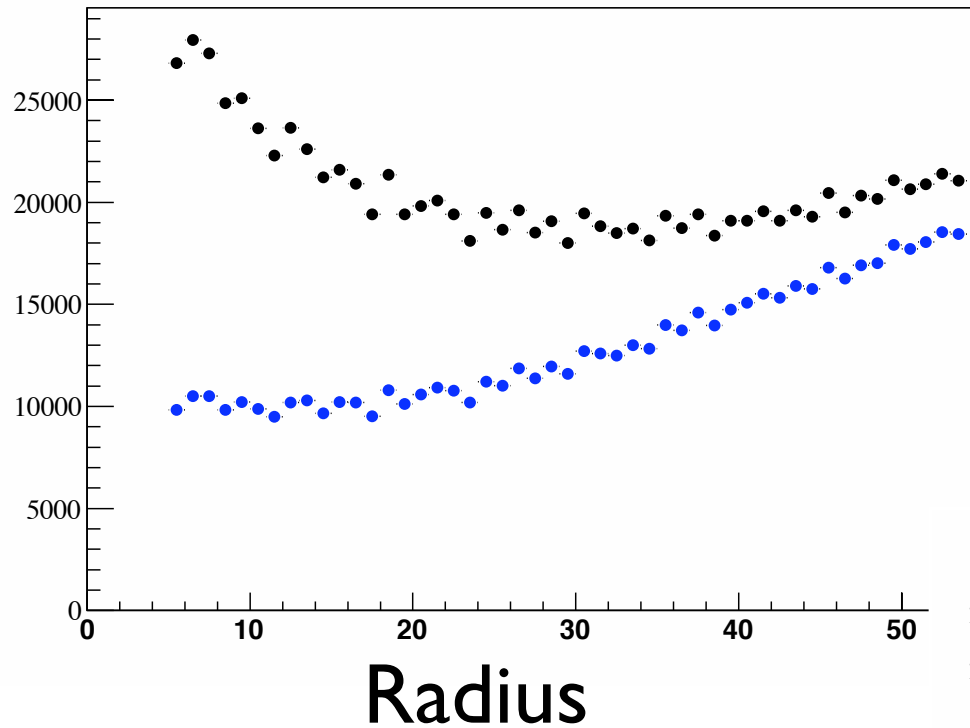
- initial idea:
 - grid in phi and z, 3 parameters, spacing in each direction and the height
 - located at the GEM stacks
 - other shades to block inactive regions of the detector
 - large z, small r region, trapezoid shades

some results

| phi spacing (cm) | z spacing (cm) | height (cm) | fraction blocked |
|------------------|----------------|-------------|------------------|
| 5 | 5 | 5 | 0.63 |
| 2.5 | 2.5 | 2.5 | 0.63 |
| 2.5 | 2.0 | 2.5 | 0.68 |
| 2.0 | 2.5 | 2.5 | 0.65 |
| 2.0 | 2.0 | 3.0 | 0.76 |

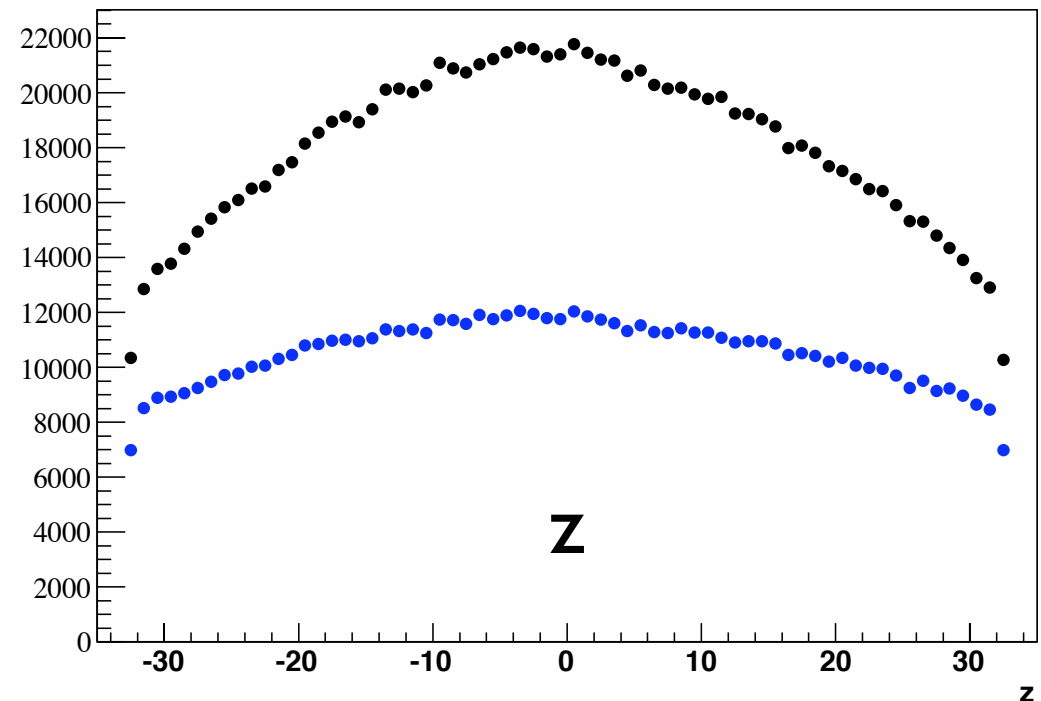
- only way to increase blocked scintillation is to increase height relative to spacing
- consistent with Sasha's results from the proposal

shade effectiveness

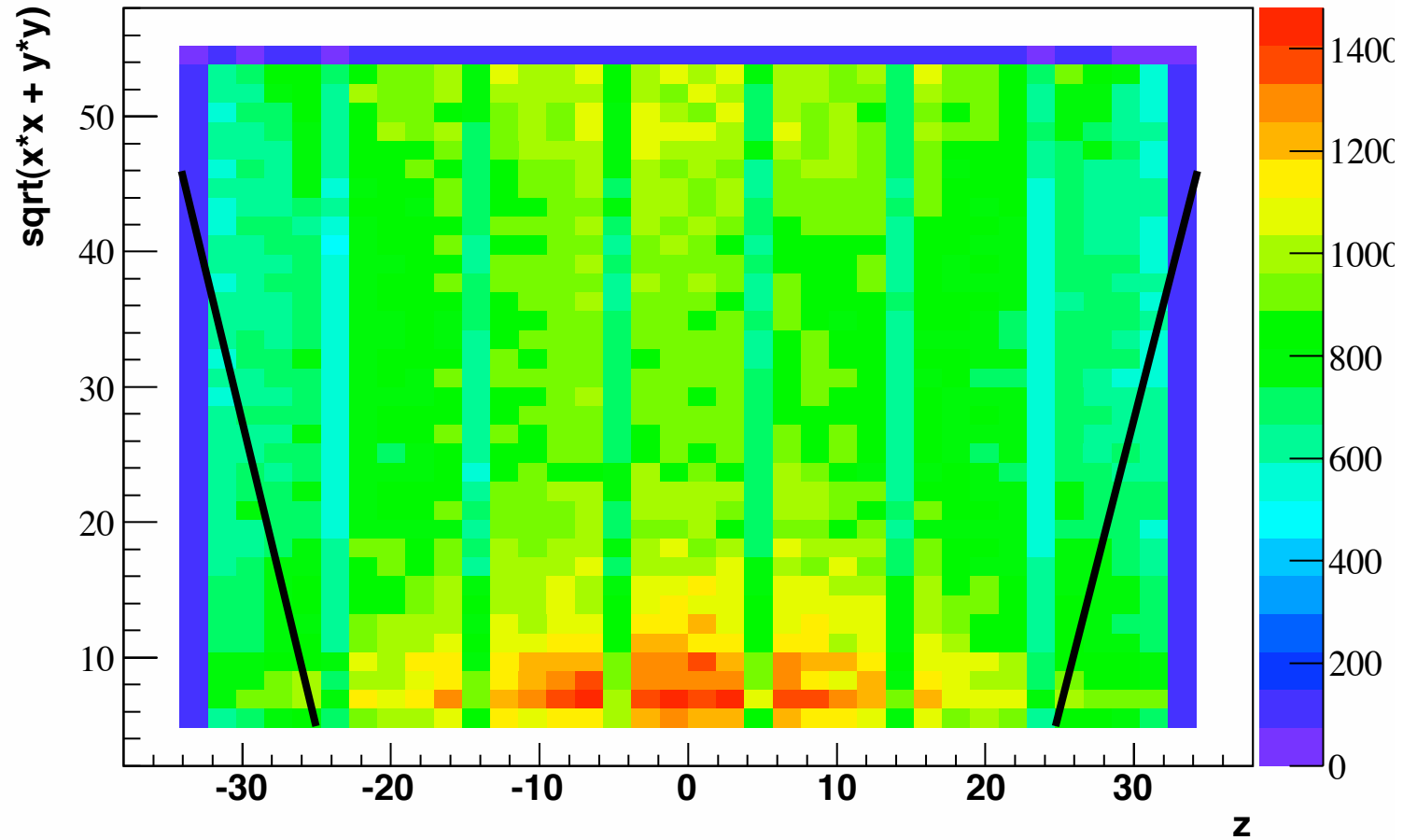


scintillation which hits
the Csl w/o shades

scintillation blocked
by 2.5x2.5x2.5 shades



trapezoid shades



trapezoid shades

- goal: exclude low-radius high-z region where there are no primary particles
- place shades at $z=\pm 25\text{cm}$ (consistent with PPG075 cuts)
- such a wide vertex cut makes these shades less effective
- going to a 20cm vertex cut loses $\sim 20\%$ of events

| radius of shade at edge | fraction of light blocked by trapezoid shades | fraction of light blocked by trapezoid & 2.5x2.5x2.5 shades | percentage improvement over 2.5x2.5x2.5 shades |
|-------------------------|---|---|--|
| 45cm | 7.0% | 4.0% | 3.0% |